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Subject:	Arkema Preliminary Data Screening Approach
Date:	02/22/2006 04:44 PM

Sean,

DEQ reviewed Arkema's February 2, 2006 revised data screening approach memo for the removal action. The following are our review comments.

General Comment

The ARKEMA site presents a current and ongoing large source of PBTs (i.e., DDT, DDD and DDE) to the Willamette River and related food web. It is the risk associated with the bioaccumulation pathway that is the main reason to proceed with the early action. Despite this, the ARKEMA strategy narrowly defines "principle threat" as a direct toxicity mechanism (page 3, Section 4.1), and rarely mentions bioaccumulation as even a pathway of concern. Indirect exposure resulting from bioaccumulation can and needs to be linked to principle threat language. It is clear from ARKEMA's response that they plan to delineate the site based on a toxicity assessment; the key elements of which do not even mention bioaccumulation. ARKEMA is proposing a substantial amount of work to determine the distribution of principle threat sediments based on site specific toxicity (i.e., site specific sediment toxicity testing and statistical evaluation of the data). Most of which is likely to be of little value to them if the removal action area is defined based on potential bioaccumulation threat as it should be.

DEQ requests that the potential bioaccumulation risk be one of the primary factors EPA and ARKEMA use to define the removal action area boundary. ARKEMA should also clearly understand that the potential bioaccumulation threat from DDT in site sediment will likely outweigh arguments to define (i.e., reduce) the boundary based on sediment toxicity results.

Specific Comments

1. Page 2, Section 3, 3rd paragraph - The updated DEQ bioaccumulation screening approach for sediments (to be forwarded this week to EPA) should be used instead of the reference ODEQ 2001 bioaccumulative sediment SLVs.

2. Page 2, Footnote 2: DEQ requests that ARKEMA identify the referenced "different values" they are referring to so that DEQ and EPA can either correct the JSCS values or clarify the screening values to be used for the early action as necessary.

3. Page 4, Section 4.1, 3rd paragraph - It is not clear from this paragraph that ARKEMA is proposing to use bioaccumulative screening values for sediment and riverbank soils in the initial screening step. Bioaccumulation SLVs need to be part of the initial screening.

4. Page 5, Sections 5 and 5.1 – Again, ARKEMA is not proposing to consider exceedances of bioaccumulative SLVs as one of the factors in determining the boundary of the removal action area. The early action at the ARKEMA site is first and foremost about controlling/limiting the availability of DDT to the aquatic food web. The bioaccumulative properties of DDT are the primary concern. The screening process proposed by ARKEMA appears to ignore this endpoint and focus on acute toxicity (e.g., aquatic toxicity testing).

5. Page 5, Section 5.1 - *De minimis* levels of concern should be defined here.

6. Page 5, Section 5.1, Geo-spatial characterization - We shouldn't have a "contiguous stations" requirement before we consider an area toxic. The information from the toxicity tests should go into defining the site boundary, which should be developed on a point by point basis. Also, what is ARKEMA defining as

"minor" and "significant"?

7. Page 5, Section 5.1, Footnote 7 - ARKEMA is proposing to develop figures that will compare *total DDT* to PECs and TECs. However, these maps should be developed to show the *total DDD, DDE and DDT* separately - esp. given the greater toxicity of DDE to upper level receptors. This is one area where focusing on direct toxicity (to invertebrates) will miss a potential area more toxic to mammals and birds (e.g. high DDE areas).

8. Page 6, Section 5.1 – Too much weight and effort (i.e., aquatic toxicity testing and statistical significance) is placed on determining the toxicity of the sediments. DEQ acknowledges that establishing the distribution of acutely toxic sediments is important information but not in the absence of bioaccumuative considerations. Given that the potential bioaccumulation pathway should be one of the most significant, *if not the most significant factor* in the determination of the RRA, it is not clear that the level of effort ARKEMA is proposing to determine site sediment toxicity is warranted.

9. Page 6, Statistical Significance: The upstream stations sampled for the harbor wide program ***were not selected to act as reference stations for the bioassays***. If a reference station is to be used, it should be selected with EPA. If they are to be used to define "*de minimis*" they need to be as close to contaminant free as possible, and not represent extreme "ambient". Statistical analysis between reference and site sediments should be evaluated using alpha levels of both 0.5 and 0.1 to evaluate power - this is mentioned in evaluating for normality but not for evaluating test results.

10. Page 6, Biological Effects – DEQ does not agree that the thresholds developed by Ecology in 2002 represents "levels above which minor or potential effects are expected to occur". For example, for the amphipod and midge % mortality there could be effects here, but after subtracting out the "reference" location these effects are dismissed (as background toxicity). A "minor threshold" would be the exceedence of 10% (or S-R < 10%), a moderate toxicity most likely occurs between 10% and 25%, and significant threshold is > 25%, as they indicate here. If we can't agree on "minor" versus "significant" maybe we should just call them the sediment quality standard (SQS) and cleanup screening levels (CSL) as Washington does. Similar changes should be made to the amphipod growth and midge growth criteria. The criteria outlined on exceedence of two minor effects thresholds or one significant effect threshold should also be changed. All exceedences should be considered in delineating the boundaries. There may be differences in response based on different pathways and sensitivities for the two test organisms.

    Control Normalized Results: As was agreed in the harbor wide approach, control normalization should be used, which is
    to subtract the control result from the test result for the mortality endpoint and divide the test result by control for the
    growth endpoint.

11. The memo doesn't say which amphipod growth test they are conducting. They should be doing the 28-day mortality and growth test.

12. Page 7, Geo-Spatial Evaluation – DEQ questions the appropriateness of using geo-spatial techniques as criteria for defining principal threat areas. For protecting the benthic community, all sampling locations are important. Also why does it say "geo-spatial techniques will be used to identify areas of concern where *average sediment toxicity results* exceed two minor or one significant effect threshold for biological effects"? Averaging results over different sample areas is not appropriate.

Please let me know if EPA has any questions about our review comments.

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